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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,963	09/24/2003	Kyung-Ju Choi	AAF 7133US (C2)	4874

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EXAMINER

POPOVICS, ROBERT J

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/669,963

Applicant(s)

CHOI, KYUNG-JU

Examiner

Robert J. Popovics

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

Claims **1,3** and **7** are rejected under 35 U.S.C. 103(a) as being unpatentable over any of **Perry (Perry's Chemical Engineer's Handbook 6<sup>th</sup>)** or **Griswold (US 2,855,330)** or **Lunde (US 2,784,801)** or **AAPA (Applicant's Admitted Prior Art)**, in view of **Stringer (US 3,853,501)**.

The use of oil as a viscous coating to create an impingement type oil filter is notoriously well known in the art. In this regard, the teachings of AAPA are noted:

**It has been long known in the filtering art that in order to provide a viscous impingement fibrous filter, a suitable adhesive medium should be used on the filter media.**

Perry, under the discussion of air filters, at page 20-107, teaches (Emphasis added by Examiner):

Panel filters may use either viscous or dry filter media. Viscous filters are so called because the medium is coated with a tacky liquid of high viscosity (e.g., **mineral oil** and adhesives) to retain the dust.

Beyond Perry, Griswold (US 2,855,330) discloses the use of mineral oil as an impingement oil coating (col. 1, lines 15-50), as does Lunde (US 2,784,801) (col. 3, lines 35-40). These references do not appear to expressly disclose the use of silica.

Stringer discloses the use of sand (a.k.a. silica) as a substrate for mineral oil in a fluid filter.

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The filter medium used in the practice of this invention is a granular substrate which has been dried of water and surface wetted with a normally liquid hydrocarbon of sufficient fluidity and sufficiently low viscosity to wet the surface and pores of the substrate. The granular substrates useful as the primary filter medium in the practice of my invention, for example, can be sand, bauxite, synthetic silica-alumina materials, such as cracking catalyst, ground glass, crushed quartz, precipitated silicates, and the like. Soft clays should be avoided since they would tend to disintegrate and cause a plugging of the filter medium. While sand is the preferred substrate because of its availability and stability, the practitioner in the art can select other suitable substrates.

(5) The particle size of the granular substrate used in the practice of this invention should be fairly uniform and of sufficient size to avoid low permeability caused by channeling or packing as may occur in the case of soft clays mentioned above. The particle size should be as small as possible to provide maximum surface area for the amount of material used while avoiding particles that are too small to allow a uniform flow of the water through the filter.

In view of the Stringer disclosure, it would have been obvious to one skilled in the art to modify the filter disclosed by any of Perry or Griswold or Lunde or AAPA, by including a sand substrate for the mineral oil in order to increase the available surface area and/or modify the viscosity/properties of the mineral oil, in order to enhance/optimize filtration. Moreover, sand is a preferred substrate because of its availability and stability as also taught by Stringer.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Perry (Perry's Chemical Engineer's Handbook 6<sup>th</sup>) or Griswold (US 2,855,330) or Lunde (US 2,784,801) or AAPA in view of Stringer (US 3,853,501), as applied above, and further in view of Wrightson (US 4,460,394). Claims 8-9 differ from the references

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as applied above, by specifying a snap together filter frame. Wrightson discloses a filter frame that snaps together. In view of this disclosure, it would have been obvious to one of ordinary skill in the art to modify the apparatus of the references as applied above, in order facilitate easier assembly of the filter.

### ***Response to Arguments***

Applicant's arguments filed May 23, 2005 have been fully considered but they are not persuasive. Applicant argues:

**Citing Stringer as a prior art reference is misplaced since it has no relation to the filtration of gases or air, nor does it remotely suggest the use of a thickener of any kind as Examiner admits.**

**Even if Stringer discloses the use of silica (e.g., glass, quartz, sand) as a substrate, it cannot be inferred therefrom that the use of a silica material as a thickener of oil obtaining an adhesive coating is taught or remotely suggested. Claim 1 has been amended and Applicant currently claims "the preselected thickener being a silica material". A person having ordinary skill in the art knows that a silica material used as a thickener in oil must be miscible in the oil and that glass, quartz, sand or any solid silica material having a particular particle size used in a substrate or water filtration bed, as taught in Stringer, will not act as a thickener in oil. Hence, Stringer does not remotely suggest the use of a silica material as a thickener in oil.**

Applicant's arguments are not remotely persuasive. First and foremost, Applicant is requested to point out in the record, the basis for the assertion that Stringer does not "remotely suggest the use of a thickener of any kind as Examiner admits" (Emphasis Added by Examiner). Specifically, where in the record did the Examiner make such an admission?

Applicant's assertion that "**Citing Stringer as a prior art reference is misplaced since it has no relation to the filtration of gases or air,**" appears to be blind to the language of Applicant's claims. Applicant's preamble recites "a fluid stream." A fluid is a liquid or a gas. Accordingly, Stringer is analogous art.

Applicant's naked assertion that, "**A person having ordinary skill in the art knows that a silica material used as a thickener in oil must be miscible in the oil**" is noted. The Examiner disagrees with this statement. If Applicant intended his "**thickener**" to be miscible in oil, Applicant's claims should specify such. They do not.

Applicant next asserts "***the unique combination of having a silica thickener with a mineral oil adhesive demonstrates unexpected results or shows a synergistic effect.***" Applicant references his specification:

a new and useful fibrous filter media coating is provided which greatly improves filtration efficiency of certain particle sizes, which is comparatively inexpensive to make, install and use in a straightforward manner, which has a high system performance efficiency and integrity and, which minimizes liberation of respiratory irritating gases

It is noted that Applicant's claims **are not limited to any particular particle sizes.**

Applicant next references Figure 4 and its corresponding discussion. The fifth curve corresponds to a soybean oil and silica combination. Soybean oil is a non-elected species. Assertions of unexpected results for claims drawn to mineral oil and silica composition cannot be found persuasive based on the performance of a soybean oil (a non-elected species) and silica combination. Moreover, there is no indication that the results depicted in Figure 4 are unexpected. Furthermore, it does not appear that an appropriate comparison has been made. A comparison of mineral oil (a very well known oil to be used in this capacity as taught by Perry's) individually in combination with each of the known thickening agents should be made. That is:

<b>Oil</b>	<b>Thickener</b>
Mineral	Known A
Mineral	Known B
Mineral	Known C
Mineral	Silica

Then, the question should be posed: Are the results unexpected using the current pertinent legal standards? If they are, then Applicant should consider submitting them in a way that clearly conveys the unexpected result.

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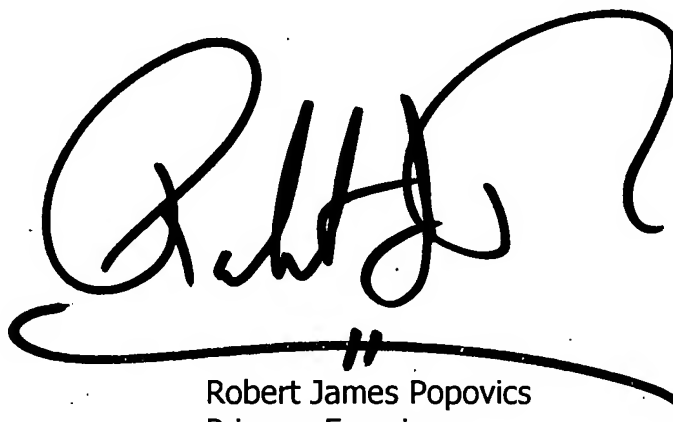
Finally, the added viscosity range of 0.5 to 500 poise appears to add nothing since it covers a range that virtually all known adhesive would fall in.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Robert J. Popovics at telephone number (571) 272-1164.

A large, stylized handwritten signature in black ink, likely belonging to Robert James Popovics. The signature is written in a cursive, flowing style with a prominent loop at the end.

Robert James Popovics  
Primary Examiner  
Art Unit 1724

June 2, 2005